WRS.

10/12/58

Notes on Auxiliary Power Pack and Relay
for [ ] :

25X1

1. Wire both audio leads directly to external terminal block.

2. The recorder that is used in place of the Minifon will have its own power.

3. Our 15-volt supply (silvercel) need not be brought out to terminal block.

4. The relay coil will not be brought out to the terminal block.

5. Bring ground or common to terminal block.

6. Package configuration: Two rows of five cells each with plug, relay and terminal block on end if practical.

NEG.
Not Loaded

This document is part of an integrated file. If separated from the file it must be subjected to [illegible] review.

NCP

23 May 1956
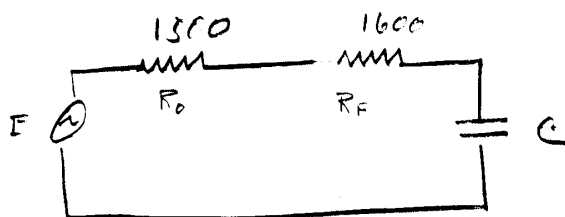
VIDEO AMPLIFIER
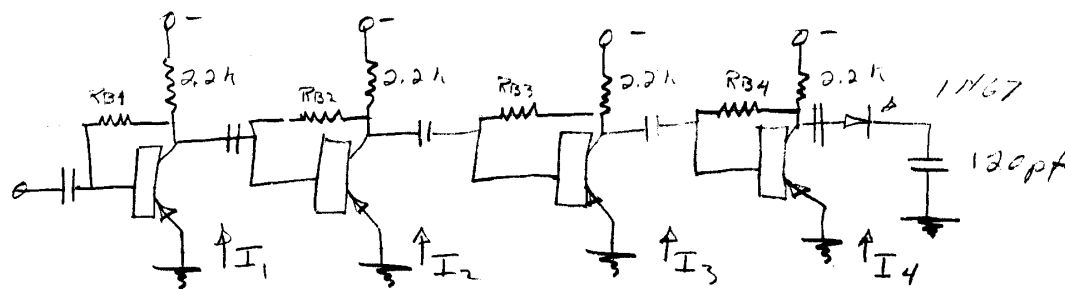
Gain: $100 \mu v$ to .8 volts at 80 kc

Bandwidth: ~ 380 kc

Output impedence of final stage - 1500Ω

$R_{B1} = R_{B2} = R_{B3} = 250$ k to 500 k

$R_{B4} \cong 165$ k

Pulse stretcher:

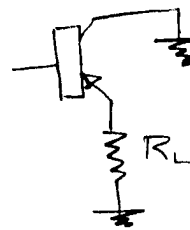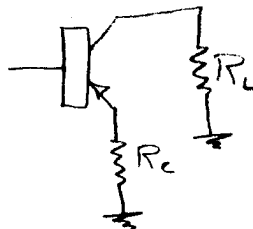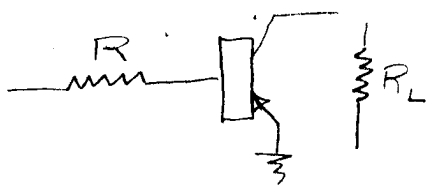R_F: forward resistance of 1N67 at .25 volts $= 1600 \Omega$

R_0 output resistance of video amp $= 1500 \Omega$

Capacity of pulse stretcher

$$W_0 C = \frac{1}{R_0 + R_F} , \left(w_0 = 2\pi \times 380 \, kc \right)$$

$$\boxed{C = 130 \, \mu\mu f}$$

(1) (2) (3)

APPROXIMATE

Column 1:

$$r_i: \quad R + r_b' + \frac{r_e'}{1-a}$$

$$A_v: \quad -\frac{r_b' + \frac{r_c'}{1-a}}{R + r_b' + \frac{r_e'}{1-a}} \cdot \frac{a R_L}{r_e' + r_b'(1-a)}$$

$$= -\frac{a}{1-a} \frac{R_L}{r_i}$$

Column 2:

$$r_b' + \frac{R_e + r_e'}{1-a}$$

$$-\frac{a R_L}{R_e + r_e' + r_b'(1-a)}$$

$$= -\frac{a}{1-a} \frac{R_L}{r_i}$$

Column 3:

$$\frac{R_L}{1-a}$$

$$1$$

$$= \frac{1}{1-a} \frac{R_L}{r_i}$$

Column 1:

R and thus r_i, may be greatly increased without affecting the approximate formulas

Column 2:

the higher approximate formula has $(R_e + r_e')$ appearing in the denominator of A_v. — Thus for large values of R_e, the voltage gain will be less.

Column 3:

as R_L is increased r_i reaches the limit of r_c' while A_v remains constant.
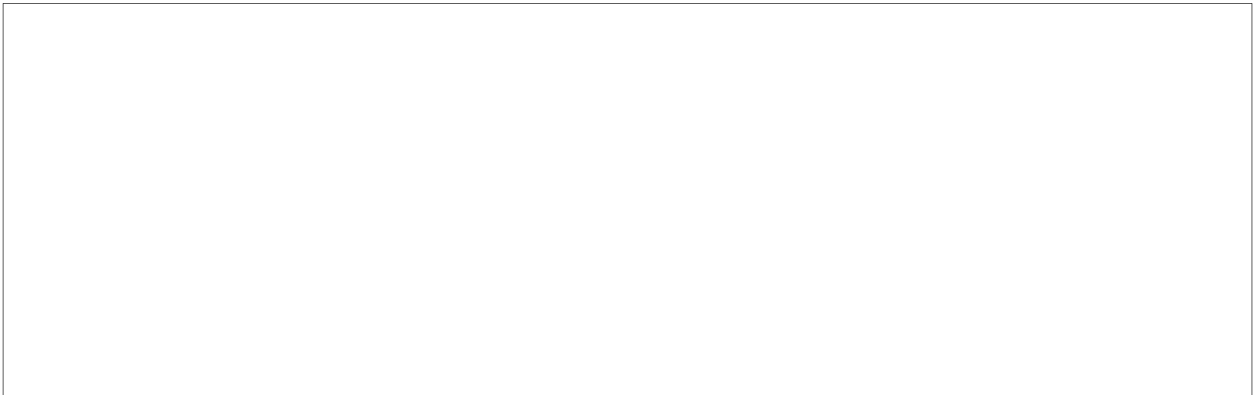
AES 12 June 1950   Shea pp 62.63

13 July 1956

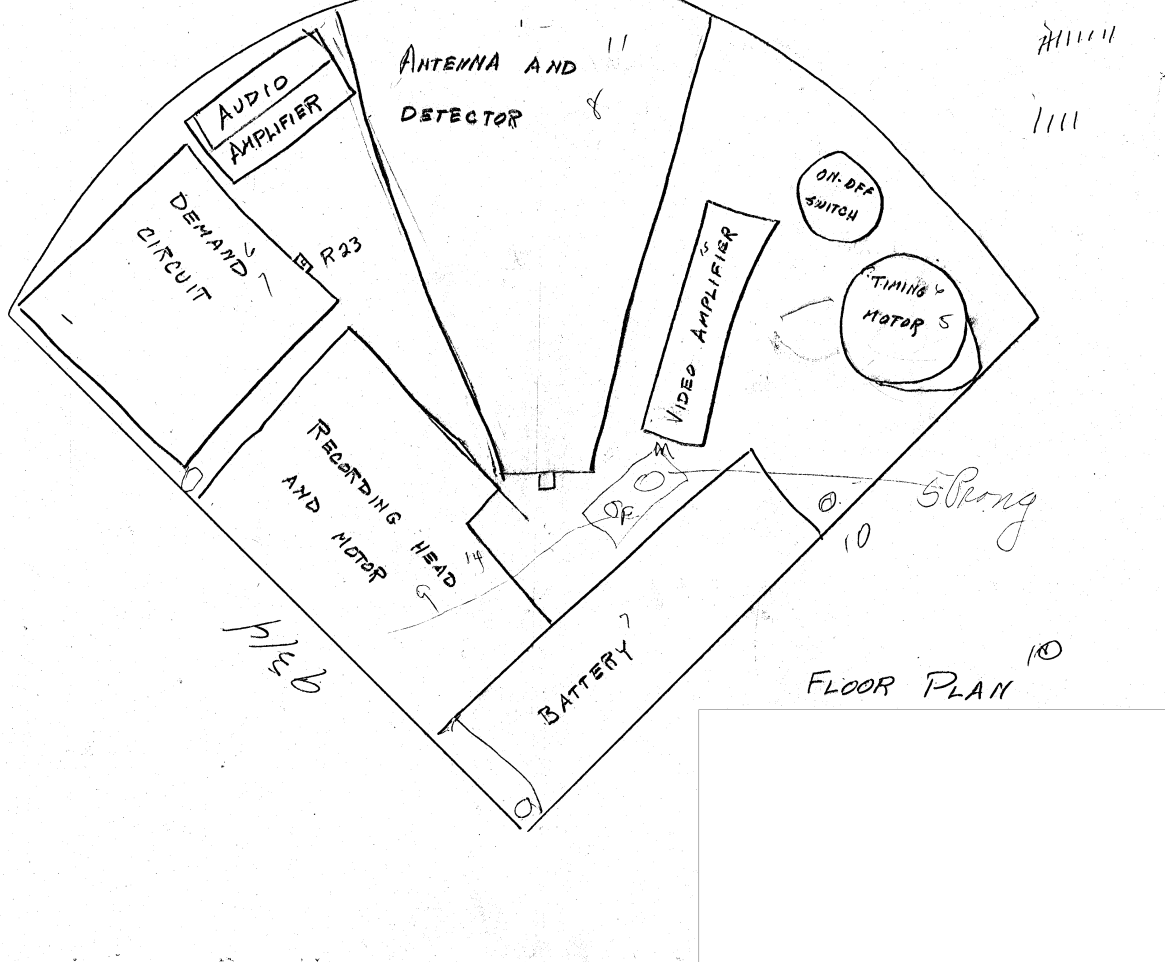PROPOSED IMPROVEMENTS ON DEMAND SYSTEM

The following improvements are suggested for optimizing the crystal video demand receiver:

1. Incorporate Philco video amplifier and pulse stretcher for good short pulse response.

25X1

ANTENNA AND
DETECTOR

AUDIO
AMPLIFIER

DEMAND
CIRCUIT

R 23

VIDEO AMPLIFIER

ON-OFF
SWITCH

TIMING &
MOTOR

RECORDING HEAD
AND MOTOR

BATTERY

5 Prong

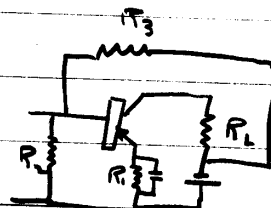FLOOR PLAN

25X1

Bias Stabilized

Audio Amplifier

ACS

22 Feb 1956

I — The stability factor (S) is given by shea as:

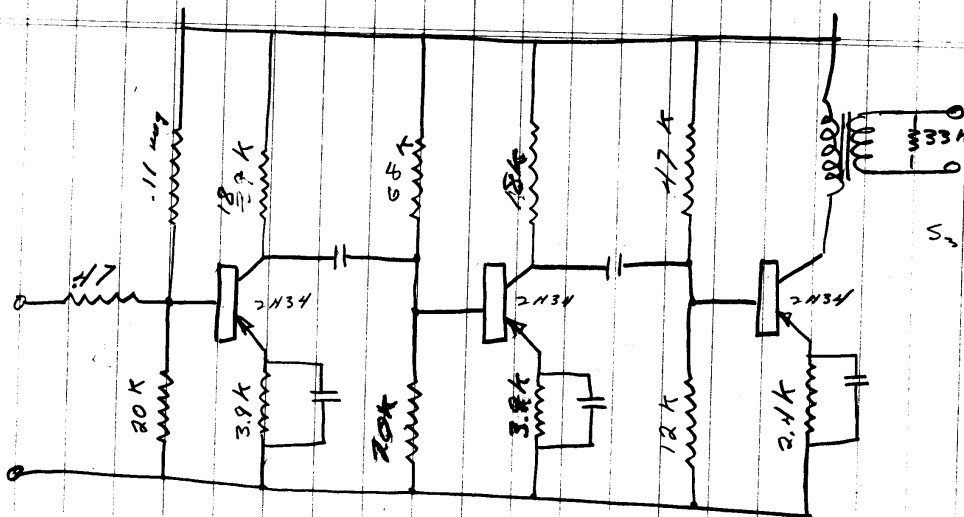$$S = \frac{1 + R_1/R_2 + R_1/R_3}{1 - \alpha + R_1/R_2 + R_1/R_3}$$

So for the circuit shown:

$$\frac{\delta I_c}{\delta I_{co}}$$

Stage	Stability factor
1	4.8
2	4.53
3	4.53

II — Measurements of gain vs temperature indicated that the values of bias resistance are much more critical during a change in temperature.

A change of the order of magnitude of a few degrees centigrade per minute is sufficient to cause a noticable decrease in gain (several db).

$$S_3 = \frac{1 + .200 + .051}{.025 + .200 + .051}$$

$$\frac{1.251}{.276}$$

$$\begin{array}{r} .025 \\ .200 \\ .051 \\ \hline .276 \end{array}$$

$$\boxed{S_3 = 4.53}$$

$$S_1 = \frac{1 + .195 + .035}{.025 + .195 + .035}$$

$$\begin{array}{r} .025 \\ .195 \\ .035 \\ \hline .255 \end{array}$$

$$= \frac{1.225}{.255}$$

$$\boxed{S_1 = 4.8}$$

$$S_2 = \frac{1 + \dfrac{3.9}{80} + \dfrac{3.9}{68}}{\dfrac{1}{40} + \dfrac{3.9}{80} + \dfrac{3.9}{68}}$$

.195   .057

.025

$$\frac{1.252}{.277}$$

$$\begin{array}{r} .025 \\ .195 \\ .057 \\ \hline .277 \end{array}$$

$$\boxed{S_2 = 4.53}$$